

SOME OBSERVATIONS ON THE NOMENCLATURE OF FOSSIL
DICOTYLEDONOUS WOODS

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A B S T R A C T

It is apparent from the existing literature that there are many irregularities and inconsistencies in the nomenclature of fossil dicot woods. These are caused by such factors as disregard for the International Code of Botanical Nomenclature, insufficient knowledge of wood anatomy, poorly preserved material and difference in the individual judgement of workers. It is, therefore, suggested that in order to bring uniformity in nomenclatural practices a common code should be agreed upon by all those engaged in the study of fossil woods.

From a survey of the published literature on the fossil dicotyledonous woods one finds that there is a fair deal of confusion in their taxonomy. To illustrate the diverse anomalies it would not be inapt to consider a few instances.

We may begin with the term *Dipterocarpoxyton*. This genus was instituted by Holden (1916) on the basis of a fossil wood from the Irrawadi series of Burma, possessing anatomical characters similar to those exhibited by the members of the Dipterocarpaceae. Apart from the doubts and objections which have been expressed about the accuracy of Holden's identification (Bancroft, 1933; Gupta, 1935a, 1935b; Chowdhury, 1936, 1952), one finds that different workers have used the name *Dipterocarpoxyton* in different senses. Kräusel (1922b, 1925, 1926), Edwards (1931), Bancroft (1933, 1935), Chiarugi (1933) and Chowdhury (1938) have used the name *Dipterocarpoxyton* in a broad sense, to include all fossil woods of the Dipterocarpaceae. On the other hand Berger (1923, 1927), Pfeiffer and Heurn (1928) and Ramanujam (1955) have used it in a restricted sense, for the fossil woods of only the tribe Dipterocarpeae which includes two living genera *Dipterocarpus* and *Anisoptera*. Ghosh (1956) has circumscribed the term still further, applying it only to the fossil woods pertaining to the genus *Dipterocarpus*. Thus, it is now not clear whether the name *Dipterocarpoxyton* represents the fossil woods of the family Dipterocarpaceae or only those of the genus *Dipterocarpus*. Nobody seems to care about its generic diagnosis or type and the name is applied according to individual interpretation and

judgement. Such a confusion would not arise if the authors stuck to the rule of giving a well defined diagnosis and fixing a type for the new name.

There is a general tendency amongst the palaeobotanists investigating Tertiary woods to name a fossil wood by adding the suffix "oxylon" to a modern taxon with which the fossil shows resemblance. Many a times, a not very cautious attitude in selecting the modern component has resulted in quite a confusion. For example *Glochidioxyton* Ramanujam (1956) was defined as a genus to accommodate the fossil woods showing affinity to the wood-type of the *Glochidion* group. According to Ramanujam the name *Glochidioxyton* does not indicate in particular the resemblance of the fossil with the extant genus *Glochidion* but indicates strong similarities with the wood type of the *Glochidion* group of the Phyllanthoideae section of the Euphorbiaceae. But the name *Glochidioxyton* itself is rather misleading as it suggests an unwarranted affinity with the extant genus *Glochidion*. Although Ramanujam (*loc. cit.*) has very cautiously suggested its affinities, it will not be unnatural for the subsequent workers to assume that this term is meant for the woods of the genus *Glochidion* and not for the *Glochidion* group as a whole.

The genus *Sapindoxylon* was instituted by Kräusel in 1922. Later Pfeiffer and Heurn (1928) found a fossil wood from the Tertiary of Java, which showed characters similar to those of the Sapindaceae. However, finding it structurally different from *Sapindoxylon*, Pfeiffer and Heurn (*loc. cit.*) assigned it to a new genus *Sapindopsoxyton*.

But Edwards (1931) merged it with *Sapindoxylon* saying that the new generic name seemed to him both unfortunate and unnecessary. If this new wood is anatomically different from *Sapindoxylon*, why should it be merged with it merely because the new generic name seems to be unfortunate. From a study of the living Sapindaceae it is apparent that the wood structure of this family is not so uniform as to be placed under a single genus. A situation like this would not develop if according to Article 62 of the International Code of Botanical Nomenclature (Lanjouw *et al.*, 1961, p. 49) a legitimate name or epithet is not rejected merely because it is inappropriate or disagreeable.

According to the same article (62) a legitimate name must not be rejected merely because it has lost its original meaning. But this rule has been disregarded in the case of *Paraphyllanthoxylon* Bailey (1924). This genus was validly instituted by Bailey for a fossil wood from the Cretaceous of Arizona, to which he gave the name *P. arizonense*. This implied a certain similarity with the wood structure of *Phyllanthus* and other similar representatives of the Phyllanthoideae. But later W. Berger (1950), finding that *Paraphyllanthoxylon arizonense* showed better affinities with the family Lauraceae than the Euphorbiaceae, changed the name to *Laurinoxylon arizonense*. This change, thus, seems to be inconsistent with the code of botanical nomenclature.

Apart from the irregularities caused by the ignorance or non-compliance of the International Code of Botanical Nomenclature, as illustrated by the foregoing examples, quite a few mistakes are caused by the lack of proper and sufficient knowledge of the wood anatomy of modern plants. It is needless to stress here how important it is for a palaeobotanist working on Tertiary woods to have an intimate knowledge of the wood structure of living plants as a pre-requisite for correct determination of the fossils. Still a great many mistakes are committed by half-baked anatomists who leave permanent records of their little knowledge and create confusion to be suffered by their successors. It would be expedient not to cite here any examples which are not scarce to find.

Some workers, when unable to find exact affinities of a fossil wood, create a new artificial generic name by adding the handy suffix "oxylon" to some proper name. In some cases, where it is genuinely not possible to work out the affinities of a particular

fossil wood even after exploring all possible avenues, this practice is justifiable. In such cases it is certainly desirable to apply some name to bring the noteworthy fossils on record, rather than pushing them back to oblivion by not denoting them by any name at all. But, on the other hand, this procedure provides an easy way for some workers who, either not knowing enough or not willing to take sufficient pains, conveniently create a new generic name for a specimen which, with a little more hard work, could have been assigned to its proper taxonomic position. Later, when more serious workers find out their correct affinities, such previous names cause nomenclatural difficulties. It is not possible to retain them after their real affinities are known but, even after being discarded, they hang on unnecessarily in synonymies and bibliographies. It would be better not to have such names to begin with. Again it would be expedient not to enumerate such examples with which, however, the fossil-wood anatomists are quite familiar.

It is rather unfortunate to have vague generic names like *Euphorbioxylon* and *Leguminoxylon*. It is well known that the wood anatomy of Euphorbiaceae, Leguminosae and many other families is not uniform for all their members. How can there be a single generic name to embrace the woods of such families? Such names should not only be unacceptable in future but those already in existence should be rejected and modified.

A worker on fossil woods faces some special problems inherent to palaeobotany. The most important are the limitations of material and the characters preserved therein. Because of the paucity of available anatomical data it may not be possible to identify a wood satisfactorily. Instead of unnecessarily multiplying names based on dubious specimens of dicot woods it would be better only to report them or at best describe them under the genus "*Dryoxylon*" (Schleiden, Schmid, 1853). This form genus was instituted for fossil dicotyledonous woods of uncertain affinities. Another form genus, *Exogenites*, was also founded for the purpose by Brongniart (Edwards, 1931). But as in Brongniart's days the term "Dicotyledon" also included conifers, cycads and even lycopods, Schleiden's *Dryoxylon* established for the woods of broad-leaved trees should be used as a useful form genus for dicotyledonous woods of uncertain affinities as suggested by Edwards (1931) and subsequently followed by Bancroft (1932) and others. This practice would

spare us from a spate of useless artificial generic names. Later on, when more details of such fossils, based on better material subsequently collected, are available, they can be assigned to their proper taxonomic positions. As suggested by Andrews (1955) "There is no justification for setting up new names when the natural relationship cannot be determined because of poor preservation. Palaeobotanists who cannot help bringing badly preserved fragmentary specimens to their laboratory, should at least refrain from assigning them binomeals". Such poor binomeals create confusion as pointed out by Potonie (1958), although in a different context. Many authors start using them indiscriminately in subsequent papers and they get quite far in circulation before the mistake is checked.

In this context it would also be important to keep in mind Recommendation 20 C of Article 20 of the International Code of Botanical Nomenclature (p. 27) which says "When naming an organ-genus or a form-genus of a fossil plant of uncertain nature or affinities, a name suggesting definite relationship with a recent plant should be avoided".

There is yet another problem concerning the institution of different genera for fossil woods which are anatomically similar but stratigraphically different. Taking a concrete example, *Paraphyllanthoxylon* Bailey (1924) and *Glochidioxylon* Ramanujam (1956) have both similar definition and circumscription. The only difference is that the genotype of *Paraphyllanthoxylon* is from the Upper Cretaceous while that of *Glochidioxylon* comes from the Tertiary. Discussing the affinities between the two and admitting their similarity, Ramanujam (*loc. cit.*) has suggested that "the name *Paraphyllanthoxylon* may, however, be retained for the woods coming from the Cretaceous horizons". It is difficult to agree to such a suggestion because the taxonomic differences are based on morphological characters and not stratigraphical. If it is not possible to distinguish between the two taxa morphologically, how can they be assigned to two different genera. This artificial distinction would be seriously misleading if followed universally. It would then be impossible to trace the geological history of any genus. Arnold (1947) has no doubt suggested that one should use different specific names for the apparently similar looking fossils from different geological strata. This may be justified because of the vagueness of the 'species' concept. But distinguishing genera on the

basis of stratigraphical differences would confute all palaeo-phytogeographical conclusions.

It is apparent from the foregoing observations, which are by no means exhaustive, that there is no uniformity in the practice of naming fossil dicotyledonous woods. Workers are using their own individual judgements in deciding when and how to institute a new taxonomic unit, sometimes in complete disregard of the International Code of the Botanical Nomenclature. There are quite a few palaeobotanists actively engaged in the study of fossil woods. Consequently it is expected that considerably large additions would regularly be made to the already existing literature on this subject. To avoid confusion in future publications, a natural outcome of individual interpretations and preferences, it is advisable if a common code is now agreed upon by all workers engaged in this discipline of palaeobotany.

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